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ABSTRACT

Title I reading and math outcomes for the school years 1980-81 and 1981-82 in the District of Columbia's public schools (grades 1, 2, 3 and 7) are the subject of this report. In both school years, achievement gains in reading exceeded program objectives for grades 3 and 7 but not for grade 2 (grade 1 scores were not used due to a technical problem). Objectives for math were not attained for either year in any grade. The outcomes were significantly lower in most grades (especially for math) than outcomes for previous years. Besides presenting the results, the report describes the program's needs assessment and selection processes, the individual components (classroom, lab, and tutorial), modifications due to budget cuts in 1981-82, and the evaluation design. (CMG)

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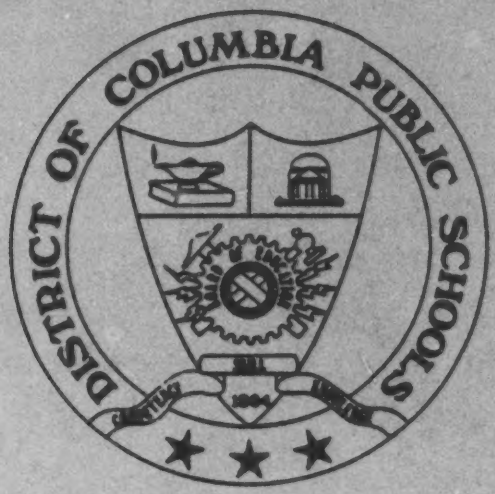


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# 1980-81 AND 1981-82 ESEA TITLE I PROGRAM

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# Final Evaluation Report

UD023 350

FLORETTA D. MCKENZIE
SUPERINTENDENT OF SCHOOLS

SEPTEMBER 1983

District of Columbia Public Schools

# Evaluation of the ESEA Title I Program

# FINAL EVALUATION REPORT

1980-81 and 1981-82

Prepared by
Division of Quality Assurance
August 1983

District of Colmbia Public Schools

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| | |
|---|---|
| Title I Technical Assistance Center, U.S. Department of Education, Region III | Joseph F. Haenn |

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## SUMMARY OF RESULTS

The District of Columbia Public Schools' Title I Program outcomes reported in this final evaluation are for school years 1980-81 and 1981-82[1]/. Achievement results of Title I students are reported as gains on the California Achievement Test (CAT) and comparisons are made with results from previous years on the Comprehensive Test of Basic Skills (CTBS).

Federal guidelines in effect for these years required that evaluation performance data be acquired and reported nationally in accordance to one of several models developed by the U.S. Department of Education and in a specified metric. The model selected for the evaluation of the D.C. Public Schools' Title I Program required the use of a norm-referenced test on which the performance of Title I students is compared to the national norms. Any gain greater than "zero" is assumed to be attributable to the program (treatment effect). The program objectives were established and gains are reported in terms of normal curve equivalents (NCEs). NCEs are roughly equivalent to percentiles but differ in that the distance between scores on the scale is equal.

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1/ The Education Consolidation Improvement Act (ECIA), changing ESEA Title I to ECIA Chapter 1, was legislated in 1981. The program descriptor, Title I, was used through 1981-82.

## Program Objectives

The program objectives for school year 1980-81 were continued for 1981-82. They were based upon achievement gains made by Title I students for several years prior to 1980-81. The objectives were:

### Expected Achievement in Reading

#### Grade 1

Given eight months of Title I supplementary instructional services in the Title I reading laboratory, the average achievement of students in grade one will increase in percentile status relative to their peers in the national norms as measured by standardized reading achievement tests. This increase corresponds to a gain of one normal curve equivalent (NCE).

#### Grade 2

Given eight months of Title I supplementary instructional services in the Title I reading laboratory, the average achievement of students in grade two will increase in percentile status relative to their peers in the national norms as measured by standardized reading achievement tests. This increase corresponds to a gain of three NCEs.

#### Grade 3

Given eight months of Title I supplementary instructional services in the Title I reading laboratory, the average achievement of students in grade three will increase in percentile status relative to their peers in the national norms as measured by standardized reading achievement tests. This increase corresponds to a gain of three NCEs.

#### Grade 7

Given eight months of Title I supplementary instructional services in the Title I reading laboratory, the average achievement of students in grade seven will increase in percentile status relative to their peers in the national norms as measured by standardized reading achievement tests. This increase corresponds to a gain of three NCEs.

## Expected Achievement in Mathematics

### Grade 1

Given eight months of Title I supplementary instructional services in the Title I mathematics laboratory, the average achievement of students in grade one will increase in percentile status relative to their peers in the national norms as measured by standardized mathematics achievement tests. This increase corresponds to a gain of three NCEs.

### Grade 2

Given eight months of Title I supplementary instructional services in the Title I mathematics laboratory, the average achievement of students in grade two will increase in percentile status relative to their peers in the national norms as measured by standardized mathematics achievement tests. This increase corresponds to a gain of five NCEs.

### Grade 3

Given eight months of Title I supplementary instructional services in the Title I mathematics laboratory, the average achievement of students in grade three will increase in percentile status relative to their peers in the national norms as measured by standardized mathematics achievement tests. This increase corresponds to a gain of five NCEs.

### Grade 7

Given eight months of Title I supplementary instructional services in the Title I mathematics laboratory, the average achievement of students in grade seven will increase in percentile status relative to their peers in the national norms as measured by standardized mathematics achievement tests. This increase corresponds to a gain of five NCEs.

Treatment Effect

A treatment effect (gains greater than zero) was achieved in reading by students in both years at all grade levels. In 1980-81, gains ranged between .5 and 4.7 NCEs; in 1981-82, between .3 and 4.1.

In mathematics, a treatment effect was observed in 1980-81 for all levels (ranging from 1.8 to 2.7 NCEs) except grade 3 where there was a loss of 3.4 NCEs between pre and posttesting. In 1981-82, a loss was observed for both grades 2 and 3. (There was no mathematics program at grade 7.)

Different test levels were administered in grade 1 and comparisons could not be made.

Program Outcomes

Expected achievement gains as established by the program objectives and observed gains as reported on Table 1 were based upon results on the CAT administered fall and spring both years.

Table 1

EXPECTED AND OBSERVED ACHIEVEMENT OUTCOMES
1980-81 and 1981-82

| Subject | Grade | Objective Criterion (NCE's) | Observed Gain 1980-81 | Observed Gain 1981-82 |
|---|---|---|---|---|
| Reading | 1 | 1 | [a] | [a] |
| | 2 | 3 | .5 | .3 |
| | 3 | 3 | 4.7 | 3.7 |
| | 7 | 3 | 3.8 | 4.1 |
| Mathematics | 1 | 3 | [a] | [a] |
| | 2 | 5 | 1.7 | -1.3 |
| | 3 | 5 | -3.4 | -7.4 |
| | 7 | 5 | 2.5 | [b] |

[a] Pre and posttests were different levels and data was not analyzed

[b] Title I services not provided in mathematics

In school years 1980-81 and 1981-82, achievement gains exceeded the reading objectives established by the Title I Program in grades 3 and 7; however, the reading objectives were not met in other grades. Objectives in mathematics were not attained in either years.

Because these outcomes are significantly lower in most grades (particularly mathematics) than outcomes observed in previous years, these differences must be viewed with caution. While an exploration of possible causes of the observed reversals was beyond the scope of the investigation reported in this evaluation, subsequent studies now in progress will perhaps provide some explanation.

# INTRODUCTION

## Background

The Title I Program of the District of Columbia Public Schools was established in response to the Elementary and Secondary Act of 1965. The ESEA Title I legislation authorized the appropriation of grant funds to public education agencies to provide supplemental instruction programs to meet the special needs of children living in areas highly concentrated with low income families.

In 1980, the District of Columbia Public School System was the eleventh largest city school system in the nation. In school year 1980-81, almost 95 percent of the students attending the District of Columbia Public Schools were black. Free or reduced cost school lunch criteria indicated that 52 percent of the school population experienced economic need.

This evaluation report of the Title I Program of the District of Columbia Public Schools covers the 1980-81 and 1981-82 school years of primary supplementary instructional services provided to the public school students identified for the program. Subcomponents such as pupil personnel and private school services are not included.

## PROGRAM DESCRIPTION

### Progam Goal and Objectives

The major goal of the D.C. Public Schools Title I Program was to increase the individual competencies and performance of identified Title I students in the areas of reading-language and mathematics, accompanied by improved affective and psychomotor behaviors. Each component of the Title I Program had goals and objectives that were consistent with and provided reinforcement for the major goal. The major goal addressed the instructional program primarily, but set the tone for emphasis in all components of the program. The program goal was determined after needs of Title I students were assessed and in compliance with the intent of the federal legislation.

Objectives for student achievement identified the criteria by which the realization of the program goal could be measured. Program planners and administrators established objectives for student achievement in reading and mathematics for grades one through three, and seven. Student achievement was stated in NCE's (Normal Grade Equivalents). The objectives for student achievement in reading and mathematics for the target grades are provided below:

#### Expected Achievement in Reading

##### Grade 1

Given eight months of Title I supplementary instructional services in the Title I reading laboratory, the average achievement of students in grade one will increase in percentile status relative to their peers in the national norms as measured by standardized reading achievement tests. This increase corresponds to a gain of one normal curve equivalent (NCE).

Grade 2

Given eight months of Title I supplementary instructional services in the Title I reading laboratory, the average achievement of students in grade two will increase in percentile status relative to their peers in the national norms as measured by standardized reading achievement tests. This increase corresponds to a gain of three NCEs.

Grade 3

Given eight months of Title I supplementary instructional services in the Title I reading laboratory, the average achievement of students in grade three will increase in percentile status relative to their peers in the national norms as measured by standardized reading achievement tests. This increase corresponds to a gain of three NCEs.

Grade 7

Given eight months of Title I supplementary instructional services in the Title I reading laboratory, the average achievement of students in grade seven will increase in percentile status relative to their peers in the national norms as measured by standardized reading achievement tests. This increase corresponds to a gain of three NCEs.

Expected Achievement in Mathematics

Grade 1

Given eight months of Title I supplementary instructional services in the Title I mathematics laboratory, the average achievement of students in grade one will increase in percentile status relative to their peers in the national norms as measured by standardized mathematics achievement tests. This increase corresponds to a gain of three NCEs.

Grade 2

Given eight months of Title I supplementary instructional services in the Title I mathematics laboratory, the average achievement of students in grade two will increase in percentile status relative to their peers in the national norms as measured by standardized mathematics achievement tests. This increase corresponds to a gain of five NCEs.

Grade 3

Given eight months of Title I supplementary instructional services in the Title I mathematics laboratory, the average achievement of students in grade three will increase in percentile status relative to their peers in the national norms as measured by standardized mathematics achievement tests. This increase corresponds to a gain of five NCEs.

Grade 7

Given eight months of Title I supplementary instructional services in the Title I mathematics laboratory, the average achievement of students in grade seven will increase in percentile status relative to their peers in the national norms as measured by standardized mathematics achievement tests. This increase corresponds to a gain of five NCEs.

## NEEDS ASSESSMENT

An integral part of the program planning and development process is the assessment of student needs. The needs assessment examines areas of the student's academic, emotional, and socio-economic background, with the intent of determining those aspects which prevent or inhibit in some manner, the student's effort to maximize the school/learning experience. The determination of the student needs was based on results from recent standardized achievement tests, criterion-referenced tests, previous Title I evaluation reports, selected literature review, and the Student Information Form (SIF). Each of the sources of data/information is discussed in this section.

### Student Information Form

The Student Information Form (SIF) was an instrument designed specifically for the Title I Program in the District of Columbia Public Schools. The instrument collected data for each student regarding achievement, economic need, and need for Title I services. The SIF administered during school year 1979-80, revealed that an estimated 88 percent of Title I students in the target groups (K,1,2,3,7) had inadequate background experiences for gaining the maximum benefit from the school experience.

Standardized Test Data

Data from the standardized test results of Title I students revealed that as students progressed through the grades, weaknesses in reading and mathematics tended to increase. The identification of the cumulative nature of academic weaknesses suggested the need for intervention in the intermediate grades to promote learning and success in the school experience.

Evaluation Report

Evaluation reports of previous Title I Programs supported the findings of student deficiencies in reading-language and mathematics identified through other assessments of student needs.

## SELECTION PROCESS

Student participation in the Title I Program was the result of a three-way selection process. The process involved the selection of schools, the designation of grades, and the identification of students. Each of the three methods of selection is discussed in this section.

### The Selection of Schools

The selection of eligible Title I attendance areas for the District of Columbia, was based on criteria identical to that criteria recommended by the Title I Citywide Advisory Council for FY 1980 and approved by the Board of Education. Those criteria used in the selection of Title I attendance areas were:

"1. (a) an income factor based on the 1970 census

(b) the number of children eligible for free lunch

2. The income and free lunch factors are weighted; income weighted forty percent, free lunch is weighted sixty percent.

3. A combination of the numbers method and the percentage method as defined in the handbook for local Title I officals, "ESEA Title I: Selecting Target Areas," is the means by which eligibility of school attendance areas is determined."

### The Selection of Grades

The Title I Program in the public schools concentrated its services in grades Kindergarten through three, at the elementary level. At the secondary level services were concentrated at grade seven. In the private schools Title I services were provided to eligible students in grades one through eight.

Identification of Students

Students in the target grades K through 3 elementary, and grade 7 secondary were identified for participation in the FY 1981 program based on established criteria. The established criteria for participation are outlined below:

"1. Standardized Achievement Test Percentile Ranking

Students in grades one through three and seven who ranked at or below the 50th percentile on standardized tests are designated as identified Title I students and are eligible to receive program services. Students at the kindergarten level are identified for program services through the use of an equivalent raw score on a standardized achievement test. The standardized test score is the major factor in the identification of students for Title I services.

2. Grade Level Retention

All students in the target grades (1,2,3,7), who are repeating their present grade, are designated as identified Title I students and are eligible for program services.

3. Overage for the Grade Level

Students in the target grades who are two or more years older than the appropriate age for their grade are designated as identified Title I children and are eligible for Title I services.

4. Recommendations by Principals and Classroom Teachers

In some instances students are identified for Title I services based on the recommendations of a principal or classroom teacher. Recommendations for Title I services must be supported with adequate and appropriate documentation. Some of the characteristics of the learner that may encourage a teacher or principal to recommend a student for Title I services are delineated below:

a. Consistantly low classroom performance in reading-language and/or mathematics.

b. Use of a basal reader or mathematics text that are two or more years lower in instructional level than the grade level.

c. Low levels of skills mastery on criterion-referenced tests"

The executive director for the Title I Program had the final authority in granting approval of students recommended for Title I services.

## INSTRUCTIONAL SERVICES

The instructional design for Title I focused on those academic needs of Title I students that would contribute to improved performance in reading-language and mathematics. The instructional design for the program was composed of two divisions: elementary and secondary. Each division had an instructional design that recognized and provided for the academic needs of their respective populations.

### The Elementary School Instructional Design

The Title I Program at the elementary level was centered around three instructional interventions: 1) the Laboratory Program; 2) the Classroom Program; and 3) the Tutorial Program. Each of the interventions was supplemental to the regular program of instruction.

### The Reading-Language and Mathematics Laboratory Program

The laboratory program served those Title I students who were most in need of supplemental instruction. Student participants in the program were from grades one through three.

The curriculum for the laboratory program was based around a diagnostic-prescriptive approach. Information for diagnostic and planning purposes was obtained primarily from the Prescriptive Reading and Mathematics Test (PRT and PMT). Based on the diagnosis of individual learner needs an IPIP (Individually-Prescribed Instruction Procedure), was developed. The IPIP was intended to enhance skills development and mastery in reading and mathematics for the student for whom it was designed. The development of an IPIP involved the five steps delineated below:

1. Identifying the skill needs of the learner
2. Selecting the appropriate behavioral objective

3. Writing the learning prescription

4. Implementing the prescription

5. Assessing for mastery

Instructional materials used in the implementation of the laboratory program were a combination of commercial and teacher made materials. Commercial curriculum materials used were those that were screened and met program standards and expectations. A wide range in curriculum experiences and skills development was provided for students with the use of these materials. Teacher made curriculum materials were oriented toward skill mastery and included games and activities that contributed to the application and maintenance of the acquired skills.

The staffing pattern for the reading-language and mathematics laboratory component was based on the team concept. The team was staffed with a teacher, and two paraprofessionals. An educational aide and a program assistant were the paraprofessional members of the team. The teacher and the educational aide provided services on a daily basis. The laboratory teacher was the team leader and was responsible for administering the individually prescribed instruction, and for coordinating team activities in the delivery of educational services. The educational aide assisted the teacher in the delivery of educational services to the student. At least 90 percent of the services provided by the aide was in the form of direct instruction to the students. The aide also performed other services in support of the laboratory program such as recordkeeping and the development of instructional materials.

Laboratory teachers were assigned to Title I schools in accordance with the established staffing plan. The staffing plan permitted the assignment of one to four laboratory teachers to a school based upon the projected number of students to be served.

## The Classroom Program

The classroom component of the elementary program served all identified Title I students in the kindergarten through the third grade. The design for the classroom program provided for Title I supplemental instruction to be delivered in the regular classroom by the regular classroom teacher for one and one-half (1 1/2) hours per week.

The curriculum of supplemental instruction in reading and mathematics is centered around three areas of concern: 1) language facility; 2) concept development; and 3) self-concept. Some of the teaching/learning strategies used in reading-language involved student activities such as, responding to literature, self-selection in reading, composing and investigating language patterns. Classroom activities for students in mathematics laboratories provided opportunities for the students to apply some of the concepts learned to simulate everyday life experiences.

The classroom teacher was responsible for the implementation of the classroom program. Classroom support and assistance were provided by the Parent Partner. At the kindergarten level the educational aide assisted the teacher on a shared basis. One aide worked with two teachers.

## The Tutorial Program

The tutorial program was an extension of the laboratory program, and served students in grades one through three who had parental permission to participate. Tutorial assistance was provided from Monday through Thursday either before or after school.

Learning activities in the tutorial program were centered around the individual tutorial prescriptions developed by the classroom teacher, the laboratory teacher and the educational aide. Help with homework assignments

was also provided. Consistent with the curriculum emphasis of the laboratory programs, reading-language and mathematics were the curriculum emphasis for the tutorial program.

The educational aide was responsible for providing the tutorial assistance. However, additional support was provided by other school personnel. The school principal, classroom teachers, resource teachers, pupil personnel aides and regional staff, were among the school personnel who provided support services in the implementation of the tutorial program.

Program Assistant

The program assistant was the team member who was primarily responsible for the clerical support functions. Some of the services provided by the program assistant were recordkeeping, typing, duplication, distribution, collection, storage and general maintenance of instructional materials.

The Secondary School Instruction Design

The secondary school instruction component was designed to serve those identified Title I students in the seventh grade. Two interventions, the laboratory program and the tutorial program, constituted the Title I secondary school instructional component. The laboratory program was the major instructional intervention. Both the laboratory program and the tutorial program are discussed in this section.

The Laboratory Program

Those seventh grade Title I students most in need of supplemental instruction were served in the laboratory program. Supplemental instruction in reading and mathematics was provided daily in class periods of fifty-five

minutes. Approximately twenty students were assigned to each class period. Each student was provided with an intensive individualized program of instruction.

Much of the curriculum emphasis was an outgrowth of the diagnosed student strengths, weaknesses, and personal needs. A variety of curriculum materials geared to the student's academic needs and interests was used in the instructional process. Games and manipulatives developed by teachers were also used to stimulate learning.

Two laboratory teams, a reading team and a mathematics team were assigned to each Title I junior high school. Each team was composed of a teacher and an educational aide, with support services provided by Parent Partners.

Tutorial Program

The tutorial program at the secondary level was an extension of the laboratory program. Tutorial assistance in reading and mathematics was provided for forty-five minutes before and after the regular school day.

Tutorial assistance was provided primarily by educational aides. Support services were provided to the program by other school personnel, such as the principal, laboratory teachers, classroom teachers, and regional staff members.

## INSTRUCTIONAL PROGRAM MODIFICATIONS IN 1981-82

In 1981-82 the base design for Title I remained virtually the same as it had been in 1980-81. However, a reduction in the size of the grant award, coupled with increased costs for personnel, material and other services due to inflation indicated a need for changes in the delivery of program services. These changes were reflected in the supplementary instructional services provided and in other pupil support services. A brief discussion of these changes is presented in this section. Fewer schools were accommodated in 1981-82, than in 1980-81.

### The Elementary Instructional Design

Each component of the instructional design for supplementary services was altered in the 1981-82 program. Those components were: 1) elementary school laboratory program, 2) elementary school classroom program, 3) elementary school tutorial program, 4) demonstration school project, 5) tutorial program, and 6) secondary school instructional design.

### Elementary School Laboratory Program

The original program design as reflected in the 1980-81 program provided supplementary services in the laboratory setting for grades one through three, in reading and mathematics. Each elementary school laboratory served 50 students in five groups of ten students each. In 1981-82 the number of students served in the laboratory was reduced to 40 students, in four groups of ten each. In both years, the amount of instructional time given to students in the laboratory remained the same, 45 minutes per group.

In 1981, students enrolled in the Title I laboratory, were permitted to receive instruction in reading and mathematics if a need existed in both disciplines. In 1982, students in the laboratory program received services in reading or mathematics, depending upon the discipline in which there was a greater need.

In summary, program modifications in the elementary laboratory program resulted in a reduction of the number of students served in the laboratory program for a given school, fewer grades served by the laboratory program, and in only one discipline.

Elementary Classroom Program

In the program design for FY 1981, the classroom program served students in kindergarten through grade three. In the modified design for 1982, this intervention served only those students in grade one.

The supplementary instruction provided in the classroom program for both years was primarily the responsibility of the classroom teacher, with instructional support provided by Title I program assistants and Parent Partners. The Title I laboratory teacher acted as an additional resource in the classroom, in that, the laboratory teacher provided additional learning activities for Title I first grade students in the classroom program.

Tutorial Program

The Title I tutorial program during FY 1981, served grades one through three for a full year. In the previous year tutorial assistance had been offered in the morning before or after the regular school day. In FY 1982, tutorial services were offered to Title I students in grades two and three in all schools, and grades four through six in demonstration project schools.

The tutorial program was operational after the regular school day, except in a few instances where schools still preferred school tutorial services before school.

Secondary School Instruction Design

In FY 1981, Title I students in the seventh grade were provided supplementary instruction in reading and in mathematics, in a laboratory setting. Supplementary instructional services were provided in reading for other target grades at the secondary level. Program modifications in FY 1982, limited supplementary services at the secondary level to grade seven in reading only.

## EVALUATION DESIGN

Title I program evaluation is conducted to determine the extent to which program participation resulted in improved academic performance in grades one, two, three and seven in public elementary and secondary schools, school years, 1980-81 and 1981-82. Federal legislation in effect for these years required that evaluation performance data be acquired and reported nationally in accordance to one of several models developed by the U.S. Department of Education and in a specified metric. For the purposes of evaluating the Title I Program of the District of Columbia Public Schools, the evaluation design utilized for determining the treatment effect (the impact on the reading and the mathematics achievement of program participants) is the norm-referenced model generally referred to as Model A. The model permits assessment of the treatment effect through use of nationally normed achievement tests. A brief overview of the Model A design is presented in the following section.

### Model A Design [2]

Model A is one of several design alternatives developed by the U.S. Office of Education to facilitate improvement in the evaluation of Title I programs throughout the nation. It is used in situations when a student population is not available to serve as a comparison group to assess treatment effects. Additionally, Model A is sufficiently flexible to permit adaptations appropriate for the unique characteristics of widely disparate school systems. [3]

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[2] A comprehensive description of Model A and other designs available for evaluation of Title I programs is presented in Tallmadge, G., and Wood, C. User's Guide: ESEA Title I Evaluation and Reporting System.

[3] For example, considerable latitude exists in the choice of instruments, logistics of test administration, etc.

The Model A evaluation design is structured as follows: a normed achievement test is administered to recipients of Title I Program services (i.e., the treatment group) prior to their entry into the program and after a specified period of treatment. Pre and posttesting of the treatment group should be conducted at approximately the same time the empirical norming group was tested. This procedure permits determination of the posttest status of the treatment group relative to a representative norm group of children within the same grade level. Hence, the norm group serves as a no-treatment comparison group.

The basic assumption of this design is that students as a group, if provided comparable instruction, tend to maintain their achievement level relative to the norming group throughout the school year because the group is likely to experience normal growth during that period. That is, the percentile ranking of the average posttest score would correspond to the percentile ranking of the average pretest score. If this result occurs, the students as a group are considered to have achieved as expected. Conversely, if the percentile ranking of the average posttest scores exceeds the percentile ranking of the average pretest score, the students as a group are considered to have exceeded their expected performance. For students who participate in a Title I program, the norm-referenced model assumes that performance which exceeds expectations is attributable to the supplementary reading and mathematics instruction provided by the Title I Program. Within this framework, the treatment effect attributed to the Title I Program is the observed posttest performance minus the expected no-treatment posttest performance, which can be formulated as follows:

Treatment effect = Observed Title I posttest (treatment) performance - Expected posttest (no-treatment) performance

In this report, results are presented in terms of achievement scores that have been transformed from percentiles into normal curve equivalent (NCE) scores. The expected posttest no-treatment performance of the Title I students is their average pretest achievement NCE score, and the effect of program participation is indicated by the differences between the average pretest and average posttest achievement NCE scores of program participants.

Use of Model A to estimate program impact requires that the following assumptions be satisfied:

1. The pretest was not used to select program participants;
2. Achievement tests were administered at times corresponding to the periods when the test was normed;
3. The same form and level of the achievement test were used for both pretest and posttest;
4. Analysis was limited to students for whom both pretest and posttest scores were available;
5. At least two-thirds of the program participants were included in the analysis; and
6. At least two-thirds of program participation occurred in the period between the pretest and postest.

For the most part, the data sets utilized in the Model A analysis met these assumptions. Program participants were selected based on their previous year's posttest achievement scores as well as on other factors.

Table 2 indicates the form and level of the California Achievement Test (CAT) administered to Title I students during the fall and spring testing periods. With the exception of grade one, test levels administered to each grade remained the same for pretest and posttest. The test form remained the same for all grades, thus fulfilling the third assumption of Model A for all grades except grade one.

Table 2

FORM AND LEVEL OF THE CALIFORNIA ACHIEVEMENT TEST ADMINISTERED TO TITLE I STUDENTS DURING THE FALL AND SPRING TESTING PERIOD (1980-81, 81-82)

| Grade | Fall | | Spring | |
|---|---|---|---|---|
| | Form | Level | Form | Level |
| 1 | C | 10 | C | 11 |
| 2 | C | 11 | C | 11 |
| 3 | C | 12 | C | 12 |
| 7 | C | 15 | C | 15 |

Only those students for whom both pretest and posttest scores were available have been included in this analysis, with the additional constraint that for these students at least two-thirds of their supplementary instruction in reading and mathematics occurred between the two testing periods. Finally, somewhat fewer than two-thirds of reported participants were included in the analysis. Tables 3 and 4 show the numbers and percentages of Title I students served in reading over a two year period for whom matched data were available.

Table 3

DISTRIBUTION OF TITLE I STUDENTS SERVED IN READING
WITH MATCHED DATA OVER A TWO YEAR PERIOD
(1980-81 and 1981-82)

| Year 1980-81 | Actual Number of Students Served | Number Included in The Analysis | Percentage in The Analysis |
|---|---|---|---|
| Grade 1 | [a] | [a] | [a] |
| 2 | 1,513 | 1,139 | 75 |
| 3 | 1,863 | 1,345 | 72 |
| 7 | 1,476 | 1,018 | 69 |
| Total | 4,852 | 3,502 | 72 |
| Year 1981-82 | | | |
| Grade 1 | [a] | [a] | [a] |
| 2 | 1,544 | 1,028 | 66 |
| 3 | 1,913 | 1,314 | 69 |
| 7 | 1,740 | 796 | 46 |
| Total | 5,197 | 1,338 | 60 |

[a] Pre and posttests were not the same level, therefore, the analyses are not reported

Table 4

DISTRIBUTION OF TITLE I STUDENTS SERVED IN MATHEMATICS
WITH MATCHED DATA OVER A TWO YEAR PERIOD
(1980-81 and 1981-82)

| Year 1980-81 | Actual Number of Students Served | Number Included in The Analysis | Percentage in The Analysis |
|---|---|---|---|
| Grade 1 | 1,280 | 1,155 | 90 |
| 2 | 1,489 | 1,123 | 75 |
| 3 | 1,709 | 1,134 | 66 |
| 7 | 1,486 | 994 | 67 |
| Total | 5,964 | 4,406 | 74 |
| Year 1981-82 | | | |
| Grade 1 | [a] | [a] | |
| 2 | 1,204 | 742 | 62 |
| 3 | 1,446 | 890 | 62 |
| 7 | [b] | [b] | |
| Total | 2,650 | 1,632 | 62 |

[a] Pre and posttests were not the same level, therefore, the analyses are not reported

[b] Title I services were not provided

## Instrumentation

Two instruments were utilized to collect data required for conduct of the Model A analysis of the D.C. Title I Program. Achievement scores were derived from the California Achievement Test (CAT) while information concerning students' Title I program eligibility and participation, grade level, etc., was derived from the Student Information Form (SIF), a teacher-completed questionnaire developed specifically for the D.C. Title I Program. A brief description of these instruments is presented in this section.

## California Achievement Test (CAT)

The CAT Form-C was selected by the Title I Office Staff for administration in 1980-81 after a review of several norm-referenced tests. The Title I Technical Assistance Center for U.S. Region III assisted in the review. The CTBS-S used in the city-wide testing program did not meet technical guidelines established by the U.S. Department of Education. The CAT is a series of overlapping test batteries designed to assess student achievement from the beginning of kindergarten through the end of the twelfth grade. The norm-referenced aspects of the CAT enables educators to determine how well students in a local school situation performed in relation to students of comparable age and background on a national level. The major skill areas assessed in the CAT are prereading, reading, spelling, language, mathematics and reference skills, or information gathering skills. Each major content area has a given number of subtest(s), some of which are often taught as single entity skills areas.

The CAT administered to the seventh grade, level 15, measures achievement in reading, spelling, language, mathematics and reference skills. The Title I evaluation in 1980-81, assessed reading and mathematics achievement. In 1981-82, assessment was limited to reading achievement. The CAT has two reading subtests which are vocabulary and comprehension. Both subtests were administered each year of the two year evaluation.

Student Information Form (SIF)

The SIF was developed to collect information from teachers about individual students enrolled in the program target grades of Title I schools. This form was reviewed and revised each year. Through the 1979-80 school year, school-related information collected on the SIF included grade level and grades repeated, Title I eligibility and participation, school attendance information, health status, and language and communications problems. Other information collected included sex, behavioral patterns (withdrawn behavior, aggressiveness, etc.) and level of family support manifested. In 1980-81 and 1981-82, the SIF was completed only for students who had received Title I instructional services and the information requested pertained mostly to Title I Program participation. In 1981-82, most of the other items were transferred to the Evaluation System Form and collected on all D.C. Public School students, grades 1-6, and therefore, serves as a systemwide needs assessment for these grades.

Description of Data Matching Procedures

Data was collected from students in grades one, two, three, and seven in D.C. Public Schools during the two school years 1980-81 and 1981-82. The Model A Computer Analysis program used by the system required that the following data be available for each student included in the analyses: (1) pretest administration of the CAT; (2) posttest administration of the CAT; and (3) teacher-reported data on each individual student. Any student for whom any of these data were missing was omitted from one or more of the analyses. Table 5 indicates the number of students in the 1981-82 analysis with data from the three sources. The data tapes containing one of the three data sources were edited to select and condense the necessary data. Several

different procedures were utilized for matching the various data sets.

Table 5

NUMBER OF STUDENTS IN EACH FILE (1981-82)

| File | Number of Cases |
|---|---|
| CAT pretest* | 17,695 |
| CAT posttest* | 19,314 |
| SIF | 8,120 |

*Includes both Title I and non-Title I students.

Table 6 uses data from the 1981-82 evaluation to illustrate the matching procedures between data files. Included in the listing is the number of matches between files. Analysis based on the total number of cases, with a three-way match (pretest, posttest, and SIF record) is presented in the Results section of this report.

Table 6

NUMBER OF STUDENTS* MATCHED BETWEEN FILES (1982)

| Types of Match | Number of Cases* |
|---|---|
| CAT pre - CAT post - SIF | 7,354 |
| CAT pre - CAT post | 9,727 |
| CAT post - SIF | 482 |
| CAT pre unmatched | 614 |
| CAT post unmatched | 1,751 |
| SIF unmatched | 284 |

* Includes both Title I and non-Title I students.

Limitations

The scope of the evaluation in 1980-81 and 1981-82 is limited to the analyses of achievement gains relative to the primary program objectives for those years. This is a departure from previous evaluations of the DCPS Title I Program in which reports included the characteristics of the Title I students served by the program, an assessment of instructional processes, subcomponents (such as services provided to private schools and pupil personnel services) and pilot programs; and research on, or analyses of data to examine specific concerns of the Title I administration. The period covered by this report represents the first evaluations of Title I Program conducted by the Division of Quality Assurance (DQA) with the assistance of the Division of Automated Information Systems without the aid of consultants. At the request of DQA, the Title I Office agreed that for two years, the evaluation design would be limited to collecting and analyzing data specifically required by federal guidelines. This delimitation was viewed as necessary until both Divisions had experience in producing the reports independently.

The Divisions encountered many difficulties in developing the reports: irregularities in scoring which prompted extensive checking; loss of staff initially trained to process the data and changes in data collection procedures which required changes in the computer program.

It is anticipated, however, that with certain modifications, the analyses of data collected for the evaluation of the 1982-83 program will be less problematic. In addition, the scope of the evaluation was expanded to include some assessment of the instructional process. Greater attention to assessing program quality is being discussed in developing the evaluation design of the 1983-84 Chapter 1 Program.

RESULTS, 1980-81

Students in first grade were administered different levels in the Fall and Spring (levels 10 and 11 respectively); therefore, pre and posttest comparisons cannot be made.

Achievement Gains Among Second Graders

Supplementary instructional services were provided to 1,513 second grade students identified for Title I services in the reading laboratory. Of these students, 1 139 students or 75 percent were included in the analysis. The mean pretest score for those students included in the analysis was 31.2 NCE's and 31.7 on the posttest. The estimated gain (posttest minus pretest) for these students was .5 NCE's.

Supplementary instructional services in mathematics were provided to 1,489 identified Title I students in Grade two of which 1,123 or 74 percent are included in the analysis. The estimated treatment effect in mathematics was 1.7 NCE's.

These results are presented in Table 7.

Table 7

ESTIMATED TREATMENT EFFECT ON READING AND MATHEMATICS ACHIEVEMENT AMONG TITLE I SECOND GRADE STUDENTS RECEIVING SUPPLEMENTARY INSTRUCTIONAL SERVICES (1980-81)

| Subject | N | Average Pretest | | Average Posttest | | Estimated Treatment Effect (NCE's) |
|---|---|---|---|---|---|---|
| | | NCE | Percentile | NCE | Percentile | |
| Reading | 1,139 | 31.24 | 19 | 31.72 | 19 | 0.48 |
| Math | 1,123 | 32.94 | 21 | 34.62 | 24 | 1.68 |

Achievement Gains Among Third Graders

During 1980-81, Title I provided supplementary instructional services in reading to 1,863 students. The analysis of reading achievement for the third grade was based on data for 1,345 students or 72 percent of the students who received reading program services. The mean pretest score was 27.57 NCE's; the mean posttest score was 32.24 NCE's. The gain for these students was 4.67 NCE's. (Table 8)

In mathematics, a loss of -3.42 NCE's are reported for the 1,334 third graders (or 66 percent) included in the analysis as shown.

Table 8

ESTIMATED TREATMENT EFFECT ON READING AND MATHEMATICS ACHIEVEMENT AMONG TITLE I THIRD GRADE STUDENTS RECEIVING SUPPLEMENTARY INSTRUCTIONAL SERVICES (1980-81)

| Subject | N | Average Pretest | | Average Posttest | | Estimated Treatment Effect (NCE's) |
|---|---|---|---|---|---|---|
| | | NCE | Percentile | NCE | Percentile | |
| Reading | 1,345 | 27.57 | 14 | 32.24 | 20 | 4.67 |
| Math | 1,334 | 37.78 | 28 | 34.36 | 23 | -3.42 |

Achievement Gains Among Seventh Graders

Of the 1,476 seventh graders served in reading in 1980-81, 1,018 (69 percent) were included in the analysis. Their mean NCE gain equaled 3.75. For the 67 percent (994 of 1,486) of the students included in the analysis of mathematics achievement, the mean gain was 2.50 NCE's. (Table 9)

Table 9

ESTIMATED TREATMENT EFFECT ON READING AND MATHEMATICS ACHIEVEMENT AMONG TITLE I SEVENTH GRADE STUDENTS RECEIVING SUPPLEMENTARY INSTRUCTIONAL SERVICES (1980-81)

| Subject | N | Average Pretest | | Average Posttest | | Estimated Treatment Effect (NCE's) |
|---|---|---|---|---|---|---|
| | | NCE | Percentile | NCE | Percentile | |
| Reading | 1,018 | 23.22 | 10 | 26.97 | 13 | 3.75 |
| Math | 994 | 31.51 | 19 | 34.01 | 23 | 2.50 |

## RESULTS, 1981-82

Students in first grade were administered different levels in the Fall and Spring (levels 10 and 11 respectively); therefore, pre and posttest comparisons cannot be made.

### Achievement Gains Among Second Graders

Title I students in the second grade laboratory program in reading experienced a positive gain in reading scores. At the second grade level 1,544, identified students received services in the Title I reading laboratory program. Students included in the analysis of data for reading were 1,028, or 66 percent of those students who received program services. The mean pretest score for those students included in the analysis for the reading program was 35.54 NCE's. The mean posttest score was 35.85. Thus, a net gain of 0.30 NCE's was experienced in reading.

Fewer Title I second grade students received laboratory services in mathematics than in reading. Students in the second grade mathematics laboratory numbered 1,204 students. The analysis of data for the second grade mathematics laboratory was based on data for 742 students, or approximately 62 percent. The mean pretest score was 39.62 NCE's. The mean posttest score, 38.55. Thus, the students lost -1.26 NCE.s.

Table 10, summarizes the estimated measurement of project impact for Grade two Title I students in reading and mathematics.

Table 10

ESTIMATED TREATMENT EFFECT ON READING AND MATHEMATICS ACHIEVEMENT AMONG SECOND GRADE STUDENTS RECEIVING TITLE I SUPPLEMENTARY INSTRUCTIONAL SERVICES (1981-82)

| Subject | N | Average Pretest | | Average Posttest | | Estimated Treatment Effect (NCE's) |
|---|---|---|---|---|---|---|
| | | NCE | Percentile | NCE | Percentile | |
| Reading | 1,028 | 35.54 | 24 | 35.85 | 25 | 0.30 |
| Math | 742 | 39.62 | 31 | 38.35 | 29 | -1.26 |

Achievement Gains Among Third Grade Students

Supplementary instruction for Title I identified students in the third grade reading laboratory was provided for 1,913 students. The number of students included in the analysis was 1,314, or approximately 69 percent of those students receiving services. Their mean reading pretest score 32.98 NCE's and their mean posttest score was 36.63 NCE's. Their posttest score represents a gain of 3.65 NCE's. (Table 11)

Results of Title I students who received services in the third grade mathematics program are reported for 62 percent or 890 of the 1,446 served. With a pretest mean of 44.23 NCE's and a posttest men of 36.19, this difference results in a loss of -7.43 NCE's. This result represented the greatest difference and/or loss for any of the grades in the two-year observation.

Table 11

ESTIMATED TREATMENT EFFECT ON READING AND MATHEMATICS ACHIEVEMENT AMONG THIRD GRADE STUDENTS RECEIVING TITLE I SUPPLEMENTARY INSTRUCTIONAL SERVICES (1981-82)

| Subject | N | Average Pretest | | Average Posttest | | Estimated Treatment Effect-NCE |
|---|---|---|---|---|---|---|
| | | NCE | Percentile | NCE | Percentile | |
| Reading | 1,314 | 32.98 | 21 | 36.63 | 26 | 3.65 |
| Math | 890 | 44.23 | 39 | 36.79 | 26 | -7.43 |

Achievement Gains Among Seventh Grade Students

In school year 1981-82, 1,740 identified students received supplementary instruction in the Title I reading laboratory program only. Analysis of data for those students served was based on matched data for 796 students or 46 percent which is less than the desirable proportion of students for inclusion in the analysis. (Table 12)

Table 12

ESTIMATED TREATMENT EFFECT ON READING ACHIEVEMENT AMONG SEVENTH GRADE STUDENTS RECEIVING TITLE I SUPPLEMENTARY INSTRUCTIONAL SERVICES (1981-82)

| Subject | N | Average Pretest | | Average Posttest | | Estimated Treatment Effect-NCE |
|---|---|---|---|---|---|---|
| | | NCE | Percentile | NCE | Percentile | |
| Reading | 796 | 22.76 | 10 | 26.87 | 14 | 4.06 |

As shown in Table 12, Title I students in the seventh grade reading laboratory had an average pretest score of 22.76 NCE's and an average posttest score of 26.87. The estimated project impact for this group of students is a gain of 4.06 NCE's.

## DISCUSSION OF RESULTS

The Comprehensive Test of Basic Skills (CTBS) was administered through 1979-80 for the purpose of selecting Title I program participants and program evaluation. Because the CTBS did not have empirical norming dates in the Fall and Spring at the times that D.C. Public Schools' Title I Program was administering the test, it was replaced with the California Achievement Test (CAT) in 1980-81 and 1981-82.

The CAT was selected after a review of selected tests as the measure most appropriate to the curriculum content and population served. Technical assistance was provided by the Technical Assistance Center (TAC) for U.S. Region III. There was also concern about the proportion of students being tested at an achievement level which was beyond their functional level. As a result, students were tested one level below their grade placement level on the CAT, i.e., a student in grade 3 was tested at an achievement level appropriate for students in grade 2. After the first administration of the CAT in fall 1979 as a pretest, the Technical Assistance Center (TAC) reviewed the results and judged the levels appropriate for the students tested.

Based upon the experience of other school districts which had switched from grade level to functional level testing, the program staff was prepared to expect a drop in the performance level of students. This "loss", however, would be offset by an increase in gain scores because a more accurate measure of students' progress would result.

As can be seen in Tables 13 and 14, what was predicted did not occur. In comparing student performance for 1979-80 and 1980-81 in reading, pretest and posttest performance in 1980-81 did fall slightly but gains remained relatively the same in grades 1 and 3 with just a slight drop in grade 7. Grade 2, however, was just the opposite; the pretest level was considerably higher with

Table 13

PRETEST, POSTTEST, AND TREATMENT EFFECTS ON READING ACHIEVEMENT AMONG STUDENTS RECEIVING TITLE I SERVICES IN 1979-80 AND 1980-81

| Year | Grade | N | Average Pretest | | Average Posttest | | Estimated Treatment Effect (NCE's) |
|---|---|---|---|---|---|---|---|
| | | | NCE | Percentile | NCE | Percentile | |
| 1979-80 | 1 | 905 | 41.3 | 33 | 42.4 | 35 | 1.1 |
| 1980-81 | 1 | 1,102 | 36.7 | 26 | 37.8 | 28 | 1.1 |
| 1979-80 | 2 | 844 | 23.8 | 11 | 31.5 | 29 | 7.7 |
| 1980-81 | 2 | 1,139 | 31.2 | 19 | 31.7 | 19 | -.5 |
| 1979-80 | 3 | 1,161 | 29.0 | 16 | 33.9 | 22 | 4.9 |
| 1980-81 | 3 | 1,345 | 27.6 | 14 | 32.2 | 20 | 4.7 |
| 1979-80 | 7 | 406 | 25.0 | 12 | 30.1 | 17 | 5.1 |
| 1980-81 | 7 | 1,018 | 23.22 | 10 | 27.0 | 13 | 3.8 |

Table 14

PRETEST, POSTTEST, AND TREATMENT EFFECTS ON MATHEMATICS ACHIEVEMENT AMONG STUDENTS RECEIVING TITLE I SERVICES IN 1979-80 AND 1980-81

| Year | Grade | N | Average Pretest | | Average Posttest | | Estimated Treatment Effect (NCE's) |
|---|---|---|---|---|---|---|---|
| | | | NCE | Percentile | NCE | Percentile | |
| 1979-80 | 1 | 717 | 42.7 | 37 | 49.1 | 48 | 6.4 |
| 1980-81 | 1 | 1,155 | 40.3 | 32 | 43.2 | 37 | 2.2 |
| 1979-80 | 2 | 612 | 30.8 | 18 | 42.1 | 36 | 11.2* |
| 1980-81 | 2 | 1,123 | 32.9 | 21 | 34.6 | 24 | 1.7 |
| 1979-80 | 3 | 796 | 28.7 | 16 | 40.8 | 33 | 12.1 |
| 1980-81 | 3 | 1,334 | 37.8 | 28 | 34.4 | 23 | -3.4 |
| 1979-80 | 7 | 335 | 25.1 | 12 | 34.8 | 24 | 9.8* |
| 1980-81 | 7 | 994 | 31.5 | 19 | 34.0 | 23 | 2.5 |

*The difference is due to rounding.

little change in the posttest resulting in a loss, although small. This unexpected outcome is compounded by the fact that in previous evaluations, grade 2 had always demonstrated the highest gains compared to the other grades and both the evaluators and program staff were equally perplexed about the disproportinate gains.

An examination of Table 14 showing comparable data for mathematics reveals that while pretest levels for grades 1 and 2 in 1980-81 were near those of 1979-80, there was not nearly as much growth. The pretest level of grade 7 is slightly higher the second year, but there is again little gain. The results for grade 3 in mathematics are similar to that of grade 2 in reading. The pretest performance is considerably higher in 1980-81 compared to 1979-80 yet there is a loss in posttest performance. The gains in 1,2, and 7 are considerably smaller in 1980-81.

A five year comparison of achievement gains of Title I students in reading and mathematics is shown in Tables 15 and 16. These presentations further illustrate that the observations of the last two years are markedly different from previous years, particularly in mathematics. The fact that the outcomes were expected to be just the opposite, makes the findings even more puzzling.

Due to delimitations cited in the Evaluation Design Section of this report indepth analyses of possible explanations were not performed. Evaluation of the instructional processes and outcomes of the 1982-83 Chapter 1 Program now in progress which will be completed in 1983-84, will perhaps, provide some answers.

Table 15

TITLE I PROGRAM IMPACT ON READING ACHIEVEMENT: COMPARISON OF ESTIMATED TREATMENT EFFECT (IN NCE'S) AMONG STUDENTS RECEIVING TITLE I SERVICES 1977-78 THROUGH 1981-82

| | 1977-78[a]/ | | 1978-79[a]/ | | 1979-80[a]/ | | 1980-81[b]/ | | 1981-82[b]/ | |
|---|---|---|---|---|---|---|---|---|---|---|
| Grade | N | Mean Gain (NCE) | N | Mean Gain (NCE) | N | Mean Gain (NCE) | N | Mean Gain (NCE) | N | Mean Gain (NCE) |
| 1 | 1,649 | .60 | 1,277 | 1.66 | 905 | 1.06 | 1,102 | 1.1 | 1[c]/ | |
| 2 | 1,365 | 8.76 | 1,162 | 9.68 | 844 | 7.72 | 1,139 | .5 | 1,028 | .3 |
| 3 | 1,211 | 2.23 | 1,091 | 3.08 | 1,161 | 4.92 | 1,345 | 4.7 | 1,314 | 3.7 |
| 7 | 643 | 2.82 | 172 | -.63 | 406 | 5.12 | 1,018 | 3.8 | 796 | 4.1 |

[a]/ California Test of Basic Skills (CTBS)

[b]/ California Achievement Test (CAT)

[c]/ Pre and posttests were different levels and data were not analyzed.

Table 16

TITLE I PROGRAM IMPACT ON MATHEMATICS ACHIEVEMENT: COMPARISON OF ESTIMATED TREATMENT EFFECT (IN NCE'S) AMONG STUDENTS RECEIVING TITLE I SERVICES 1977-78 THROUGH 1981-82

| | 1977-78[a]/ | | 1978-79[a]/ | | 1979-80[a]/ | | 1980-81[b]/ | | 1981-82[b]/ | |
|---|---|---|---|---|---|---|---|---|---|---|
| Grade | N | Mean Gain (NCE) | N | Mean Gain (NCE) | N | Mean Gain (NCE) | N | Mean Gain (NCE) | N | Mean Gain (NCE) |
| 1 | 1,578 | 6.15 | 974 | 7.19 | 717 | 6.42 | 1,155 | 2.7 | 1 | [c]/ |
| 2 | 1,294 | 8.50 | 943 | 11.34 | 612 | 11.14 | 1,123 | 1.7 | 742 | -1.3 |
| 3 | 1,171 | 8.99 | 720 | 10.81 | 796 | 12.06 | 1,334 | -3.4 | 890 | -7.4 |
| 7 | 573 | 6.47 | 97 | 2.35 | 335 | 9.76 | 994 | 2.5 | 7 | [d]/ |

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[a]/ California Test of Basic Skills (CTBS)

[b]/ California Achievement Test (CAT)

[c]/ Pre and posttests were different levels and data were not analyzed.

[d]/ No services in mathematics provided for Title I.